

300°C of not higher than 0.4 eV.

27. An aluminum nitride sintered body containing samarium in a converted content calculated as samarium oxide of not lower than 0.04 mole percent, said sintered body containing aluminum nitride phase and samarium-aluminum complex oxide phase with network microstructure.

28. The sintered body of claim 27, having a volume resistivity at room temperature of not higher than $1 \times 10^{13} \Omega \cdot \text{cm}$.

29. The sintered body of claim 27, wherein said samarium-aluminum complex oxide phase comprises $\text{SmAl}_{11}\text{O}_{18}$ phase with network microstructure.

30. The sintered body of claim 27, comprising at least one second rare earth element other than samarium, wherein the molar ratio of a converted content of said second rare earth element calculated as rare earth oxide to said converted content of samarium calculated as samarium oxide (said converted content of said second rare earth element/said converted content of samarium) is not higher than 2.0.

31. The sintered body of claim 30, wherein the molar ratio of total of converted contents of all the rare earth elements calculated as rare earth oxides to a calculated content of aluminum oxide (said total of converted contents of all the rare earth elements/said content of aluminum oxide) is 0.05 to 0.5.

32. The sintered body of claim 30, wherein said second rare earth element is one or more element selected from the group consisting of yttrium, lanthanum, cerium, gadolinium, dysprosium, erbium and ytterbium.

33. The sintered body of claim 30, comprising phase of complex oxide of said second rare earth element and aluminum.

34. The sintered body of claim 27 comprising SmAlO_3 phase.

35. The sintered body of claim 27 comprising aluminum nitride grains with a mean diameter of not lower than $3\ \mu\text{m}$.

36. The sintered body of claim 27, wherein the molar ratio of said converted content of samarium calculated as samarium oxide to a calculated content of aluminum oxide ($\text{Sm}_2\text{O}_3/\text{Al}_2\text{O}_3$) is 0.05 to 0.5.

37. The sintered body of claim 27 having a lightness of not higher than N4 measured according to JIS Z8721.

38. The sintered body of claim 27 comprising one or more transition metal element selected from the group consisting of metal elements belonging to the periodic table IVA, VA, VIA, VIIA and VIIIA in a content calculated as metal element of not lower than 0.01 weight percent.

39. The sintered body of claim 38, comprising said transition metal element in a content calculated as metal element of not higher than 1.0 weight percent.

40. The sintered body of claim 38 comprising crystalline phase of the nitride of said transition metal element.

41. The sintered body of claim 27 having an activation energy of temperature dependency of volume resistivity from room temperature to 300°C of not higher than 0.4 eV.

42. An aluminum nitride sintered body comprising samarium in a converted content calculated as samarium oxide of not lower than 0.04 mole percent and at least one second rare earth element other than samarium, wherein the molar ratio of a converted content of said second rare earth element calculated as rare earth oxide to said converted content of samarium calculated as samarium oxide (said converted content of said second rare earth element/said converted content of samarium) is not higher than 2.0.

43. The sintered body of claim 42, wherein the molar ratio of total

of converted contents of all the rare earth elements calculated as rare earth oxides to a calculated content of aluminum oxide (said total of converted contents of all the rare earth elements/said content of aluminum oxide) is 0.05 to 0.5.

44. The sintered body of claim 42, wherein said second rare earth element is one or more element selected from the group consisting of yttrium, lanthanum, cerium, gadolinium, dysprosium, erbium and ytterbium.

45. The sintered body of claim 42, comprising phase of complex oxide of said second rare earth element and aluminum.

46. The sintered body of claim 42, comprising aluminum nitride phase and samarium-aluminum complex oxide phase.

47. The sintered body of claim 46, wherein said samarium-aluminum complex oxide phase comprises $\text{SmAl}_{11}\text{O}_{18}$ phase.

48. The sintered body of claim 46, wherein said samarium-aluminum complex oxide phase forms network microstructure.

49. The sintered body of claim 42, having a volume resistivity at room temperature of not higher than $1 \times 10^{13} \Omega \cdot \text{cm}$.

50. The sintered body of claim 42 comprising SmAlO_3 phase.

51. The sintered body of claim 42 comprising aluminum nitride grains with a mean diameter of not lower than $3 \mu\text{m}$.

52. The sintered body of claim 42, wherein the molar ratio of said converted content of samarium calculated as samarium oxide to a calculated content of aluminum oxide ($\text{Sm}_2\text{O}_3/\text{Al}_2\text{O}_3$) is 0.05 to 0.5.

53. The sintered body of claim 42 having a lightness of not higher than N4 measured according to JIS Z8721.

54. The sintered body of claim 42 comprising one or more transition metal element selected from the group consisting of metal elements belonging